

This listing of claims will replace all prior versions, and listings, of claims in the application:

1 Claims 1-20 (canceled)

1 Claim 21 (original): A communications system, comprising:
2 a first base station, the first base station including:
3 i) a base station clock,
4 ii) a receiver circuit for receiving symbols coupled
5 to said clock, the receiver circuit having fixed
6 symbol timing; and
7 iii) a transmitter circuit for transmitting symbols
8 coupled to said clock, the transmitter circuit having
9 fixed symbol timing; and
10 a first mobile communications device for receiving
11 symbols broadcast by said first base station and transmitting
12 symbols to said first base station, the mobile communication
13 device including:
14 i) a receiver circuit for receiving signals from said
15 first base station, the receiver circuit including
16 receiver symbol timing adjustment circuitry for
17 adjusting receiver symbol timing as a function of a
18 signal received from said first base station; and
19 ii) a transmitter circuit for transmitting
20 symbols to said first base station, the transmitter
21 circuit including transmitter symbol timing control
22 circuitry slaved to said receiver symbol timing
23 adjustment circuitry, the transmitter symbol timing
24 control circuitry making adjustments to the
25 transmitter symbol timing which are the same or
26 substantially the same as the adjustments made by the
27 receiver symbol timing adjustment circuitry to the
28 receiver symbol timing.

1 Claim 22 (original): The system of claim 21, wherein the signal
2 received from said first base station is a timing control signal
3 used to control the receiver circuit to make a symbol timing
4 correction.

1 Claim 23 (original): The communication system of claim 21,
2 further comprising:

3 a second mobile communications device for receiving
4 symbols broadcast by said first base station and transmitting
5 symbols to said first base station, the mobile communication
6 device including:

7 i) a receiver circuit for receiving signals from said
8 first base station, the receiver circuit including
9 receiver symbol timing adjustment circuitry for
10 adjusting receiver symbol timing as a function of a
11 signal received from said first base station; and

12 ii) a transmitter circuit for transmitting
13 symbols to said first base station, the transmitter
14 circuit including transmitter symbol timing control
15 circuitry slaved to said receiver symbol timing
16 adjustment circuitry, the transmitter symbol timing
17 control circuitry making adjustments to the
18 transmitter symbol timing which are the same or
19 substantially the same as the adjustments made by the
20 receiver symbol timing adjustment circuitry to the
21 receiver symbol timing.

1 Claim 24 (original): The system of claim 23, further
2 comprising:

3 a second base station for transmitting symbols to the
4 first and second mobile communications devices;

5 wherein the receiver symbol timing adjustment
6 circuitry of the first mobile communication device includes
7 means for independently determining symbol timing adjustments to

8 be made when processing symbols corresponding to each of the
9 first and second base stations; and
10 wherein the transmitter symbol timing control
11 circuitry of the first mobile communication device includes
12 means for independently adjusting the symbol timing of symbols
13 transmitted to the first and second base stations, respectively,
14 as a function of the symbol timing adjustments determined to be
15 made when processing symbols corresponding to the first and
16 second base stations, respectively.

1 Claim 25 (original): The system of claim 23, wherein the
2 transmitter included in said first base station is an OFDM
3 transmitter.

1 Claim 26 (original): A method of making symbol timing
2 adjustments in a communications device including a transmitter
3 which transmits multiple symbols in each of a plurality of
4 dwells, the method comprising the step of:
5 determining the number of samples by which the symbol
6 timing is to be advanced or delayed during a dwell;
7 increasing the number of samples in one of a first symbol
8 and a last symbol of said dwell by the determined number of
9 samples when said symbol timing is to be delayed during said
10 dwell by the determined number of samples; and
11 decreasing the number of samples in one of the first symbol
12 and the last symbol of said dwell by the determined number of
13 samples when said symbol timing is to be advanced during said
14 dwell by the determined number of samples.

1 Claim 27 (original): The method of claim 26, wherein the number
2 of samples in the remaining symbols in the dwell which includes
3 said one of the first symbol and the last symbol of said dwell
4 to which samples were added or removed to adjust symbol timing

5 do not have their number of symbols changed as part of making
6 symbol timing adjustments.

1 Claim 28 (original): The method of claim 26,
2 wherein said one of a first symbol and a last symbol
3 of said dwell is said first symbol, the first symbol including a
4 cyclic prefix portion and a body portion; and
5 wherein increasing the number of samples in said first
6 symbol includes:

7 copying samples from the body portion of said
8 first symbol and inserting the copied samples at the
9 start of said first symbol thereby increasing the
10 number of samples in said first symbol.

1 Claim 29 (original): The method of claim 26,
2 wherein said one of a first symbol and a last symbol
3 of said dwell is said first symbol, the first symbol including a
4 cyclic prefix portion and a body portion; and
5 wherein decreasing the number of samples in said first
6 symbol includes:

7 removing samples from the start of the cyclic
8 prefix portion thereby decreasing the number of
9 samples in said first symbol.

1 Claim 30 (original): The method of claim 26,
2 wherein said one of a first symbol and a last symbol
3 of said dwell is said last symbol, the last symbol including a
4 cyclic prefix portion and a body portion; and
5 wherein increasing the number of samples in said last
6 symbol includes:

7 copying samples from the body portion of said first
8 symbol and inserting the copied samples at the end of
9 said first symbol thereby increasing the number of
10 samples in said first symbol.

1 Claim 31 (original): The method of claim 26,
2 wherein said one of a first symbol and a last symbol
3 of said dwell is said last symbol; and
4 wherein decreasing the number of samples in said first
5 symbol includes:

6 removing samples from the end of
7 said last symbol thereby decreasing the number of
8 samples in said last symbol

1 Claim 32 (original): A communications device, comprising:
2 a transmitter which transmits multiple symbols in each of a
3 plurality of dwells, the transmitter including:

4 means for determining the number of samples by
5 which the symbol timing is to be advanced or delayed
6 during a dwell;

7 means for increasing the number of samples in one
8 of a first symbol and a last symbol of said dwell by
9 the determined number of samples when said symbol
10 timing is to be delayed during said dwell by the
11 determined number of samples; and

12 means for decreasing the number of samples in one
13 of the first symbol and the last symbol of said dwell
14 by the determined number of samples when said symbol
15 timing is to be advanced during said dwell by the
16 determined number of samples.

1 Claim 33 (original): The device claim 32,
2 wherein said one of a first symbol and a last symbol
3 of said dwell is said first symbol, the first symbol including a
4 cyclic prefix portion and a body portion; and
5 wherein said means for increasing the number of samples in
6 said first symbol includes:

7 means for copying samples from the body portion
8 of said first symbol and inserting the copied samples
9 at the start of said first symbol to thereby increase
10 the number of samples in said first symbol.

1 Claim 34 (original): The device of claim 32,
2 wherein said one of a first symbol and a last symbol
3 of said dwell is said first symbol, the first symbol including a
4 cyclic prefix portion and a body portion; and
5 wherein said means for decreasing the number of samples in
6 said first symbol includes:

7 means for removing samples from the start of the
8 cyclic prefix portion to thereby decrease the number
9 of samples in said first symbol.

1 Claim 35 (original): The device of claim 32,
2 wherein said one of a first symbol and a last symbol
3 of said dwell is said last symbol, the last symbol including a
4 cyclic prefix portion and a body portion; and
5 wherein said means increasing the number of samples in said
6 last symbol includes:

7 means for copying samples from the body portion of
8 said first symbol and inserting the copied samples at
9 the end of said first symbol thereby increasing the
10 number of samples in said first symbol.

1 Claim 36 (original): The device of claim 35,
2 wherein said one of a first symbol and a last symbol
3 of said dwell is said last symbol; and
4 wherein said means for decreasing the number of samples in
5 said first symbol includes:

6 means for removing samples from
7 the end of said last symbol thereby decreasing the
8 number of samples in said last symbol.

1 Claim 37 (new): A method for adjusting symbol timing in a first
2 communications device in a Orthogonal Frequency Division
3 Multiplexing system, the method comprising:

4 determining a receiver symbol timing adjustment to be made
5 to adjust receiver symbol timing in said first communications
6 device to synchronize receiver symbol timing to the symbol
7 timing of a second communications device; and

8 adjusting the symbol timing of a transmitter in said first
9 communications device as a function of said determined receiver
10 symbol timing adjustment,

11 said step of adjusting the symbol timing of the transmitter
12 including selecting one of a first and a last symbol in a dwell
13 to be modified to adjust the transmitter symbol timing, said
14 dwell being a period of time comprising multiple symbol tones
15 prior to switching to another tone or set of tones.

1 Claim 38 (new): The method of claim 37, wherein said receiver
2 symbol timing adjustment indicates that symbol timing should be
3 adjusted by an amount corresponding to D digital signal samples.

1 Claim 39 (new): The method of claim 38, wherein said step of
2 determining a receiver symbol timing adjustment includes:
3 receiving a symbol timing correction signal transmitted from
4 said second communications device.

1 Claim 40 (new): The method of claim 38, wherein the first
2 communication device is a wireless terminal (104, 106).

1 Claim 41 (new): The method of claim 40, wherein the second
2 communication device is a base station (102).

1 Claim 42 (new): The method of claim 41, further comprising:
2 determining an additional receiver symbol timing adjustment
3 to be made to adjust receiver symbol timing of an additional

4 receiver in said first communications device to synchronize the
5 additional receiver symbol timing to be the symbol timing of a
6 third communications device, said third communications device
7 being an additional base station; and

8 adjusting the symbol timing of an additional transmitter in
9 said first communications device as a function of said
10 determined additional receiver symbol timing adjustment.

1 Claim 43 (new): The method of claim 40, further comprising:
2 adjusting the symbol timing of a receiver included in said
3 first communications device to delay said receiver symbol timing
4 by said D samples; and

5 wherein the step of adjusting the symbol timing of said
6 transmitter in said first communications device includes
7 delaying the transmission of symbols by D samples by modifying
8 the selected symbol by adding D samples to said selected symbol
9 thereby increasing the duration of the selected symbol.

1 Claim 44 (new): The method of claim 43, wherein symbols in said
2 dwell other than said selected symbols are not changed as part
3 of adjusting the symbol timing of said transmitter.

1 Claim 45 (new): The method of claim 43, wherein the first
2 symbol in said dwell is selected as said selected symbol, the
3 selected symbol having N samples, the step of modifying the
4 selected symbol by adding D samples including:

5 copying D samples from a body of said first symbol and
6 inserting the D copied samples at the start of said selected
7 symbol to produce a modified first symbol having N+D samples.

1 Claim 46 (new): The method of claim 43, wherein the last symbol
2 in said dwell is selected as said selected symbol, the selected
3 symbol having N samples, the step of adjusting the symbol timing
4 further including:

5 copying D samples from a body of said selected symbol and
6 inserting the D copied samples at the end of said selected
7 symbol to produce a modified last symbol having N+D.

1 Claim 47 (new): The method of claim 40, wherein the step of
2 adjusting the symbol timing of said transmitter in said wireless
3 terminal includes:

4 adjusting the symbol timing of said transmitter included in
5 said first communications device to advance the transmission of
6 symbols.

1 Claim 48 (new): The method of claim 47, wherein advancing the
2 transmission of symbols includes the step of removing D samples
3 from said selected symbol thereby decreasing the duration of
4 said selected symbol.

1 Claim 49 (new): The method of claim 48, wherein said selected
2 symbol is the first symbol in said dwell, the selected symbol
3 includes N samples beginning with a K sample cyclic prefix; and

4 wherein adjusting the symbol timing of said transmitter
5 includes modifying said selected symbol by deleting D samples
6 from the start of the K sample cyclic prefix of said selected
7 symbol to produce a first modified symbol having N-D samples,
8 where N, D and K are positive non-zero integers.

1 Claim 50 (new): The method of claim 48, wherein said selected
2 symbol is the last symbol in said dwell, the selected last
3 symbol having N samples; and

4 wherein adjusting the symbol timing of said transmitter
5 includes modifying said selected symbol by deleting D samples
6 from the end of said selected symbol to produce a modified last
7 symbol having N-D samples, where N and D are positive non-zero
8 integers.

1 Claim 51 (new): A mobile communications device for an
2 Orthogonal Frequency Division Multiplexing system, comprising:
3 a clock;
4 receiver symbol timing control circuitry (208) coupled to
5 said clock (210) for determining a receiver symbol timing
6 adjustment used to synchronize receiver symbol timing to the
7 symbol timing of at least one broadcast signal;
8 transmitter symbol timing control circuitry coupled to said
9 clock and to said receiver symbol timing control circuitry, the
10 transmitter symbol timing control circuitry receiving symbol
11 timing adjustment information from said receiver symbol timing
12 adjustment circuitry
13 said transmitter symbol timing adjustment making a
14 transmitter symbol timing adjustment in a direction which is the
15 same as a receiver symbol timing adjustment made by said
16 receiver symbol timing control circuitry;
17 said transmitter timing control circuitry including means
18 for selecting a symbol to be lengthened or shortened prior to
19 transmission to implement said symbol timing adjustment, said
20 selected symbol being one of a first symbol and a last symbol in
21 a dwell, said dwell being a period of time during which a
22 transmitter of said mobile communications device remains on the
23 same tone or being a period of time comprising multiple symbol
24 tones prior to switching to another tone or set of tones.

1 Claim 52 (new): The mobile communications device of claim 51,
2 wherein the symbol timing control circuitry further includes:
3 copy circuitry for performing a cyclic copy to be added
4 samples to said selected symbol to be transmitted when said
5 transmitter symbol timing is to be delayed; and
6 deleting circuitry for deleting samples from said selected
7 symbol to be transmitted when said transmitter symbol timing is
8 to be advanced.

1 Claim 53 (new): The mobile communications device of claim 52,
2 wherein said symbols are frequency division multiplexed symbols,
3 the mobile communication device further comprising:

4 an antenna for transmitting symbols including a symbol
5 whose duration has been changed by one of said copy circuitry
6 and said deleting circuitry.

1 Claim 54 (new): The mobile communications device of claim 51,
2 wherein said receiver symbol timing control circuitry (208)
3 includes means for independently determining symbol timing
4 adjustments to be made when processing symbols corresponding to
5 each of a first and a second base station; and

6 wherein said transmitter symbol timing control circuitry
7 (212) includes means for independently adjusting the symbol
8 timing of symbols transmitted to the first and second base
9 station, respectively, as a function of the symbol timing
10 adjustments determined to be made when processing symbols
11 corresponding to the first and second base stations,
12 respectively.